Name and brief description of Program:
Biological Databases and Informatics (BD&I) Program, Division of Biological Infrastructure, National Science Foundation.

Brief description of goals of Program:
The Biological Databases and Informatics program supports research that enables investigators to manage and make use of biological data and information for the discovery of new knowledge and the advancement of the field of biology. The Program supports a range of activities along a continuum, from the formative, theoretical development of new algorithms, data structures and tools specific to the management of biological information, through the development of new information resources to the enhancement of established resources needed by whole communities of biological researchers. However, the highest priority of the BD&I program as reflected in this solicitation is on supporting proposals that address the formative stages of this continuum. Examples include theoretical research on data structures; new database architectures more tuned to the complexity of biology; planning and prototype development of new types of biological data- or knowledge-bases; and design of easy-to-use interfaces and tools for data input, manipulation, analysis and extraction. Note that the Directorate for Biological Sciences, (BIO; includes the BD&I program) does not provide support for research with disease related goals, including work on the etiology, diagnosis and treatment of physical and mental disease, abnormality, or malfunction in human beings or animals. Animal models of such conditions and the development and testing of drugs and other procedures for their treatment also are not eligible for support

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Website address of program:
http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf05577

Brief description of computational biology components and their goals:
The BD&I program encourages research on and/or the development of the following:

- New methods and tools for the construction and operation of, and access to, biological databases, including research into generic database infrastructures designed to be extendable to different biological domains;
- New data structures and new data-management systems for biological databases so they can manage new types of biological information;
- "Metadatabase" architectures for biology, for example, single query interfaces that present data from transparent queries across multiple databases;

- Algorithms and software related to the retrieval and use of heterogeneous biological information, for example, web services that integrate diverse information sources;
- Standardized nomenclature, conceptual information models, ontologies to describe biological concepts, and semantic content efforts;
- Databases and related software tools crucial for a broad area of biology; and
- Alternative economic models for long-term sustainable support of important community information resources.

Brief description of resources and tools available for sharing:
The BD&I program seeks to encourage new approaches to the management of biological knowledge that renders the collection, maintenance, dissemination and query of the data and information therein of greater utility to the scientific community. The BD&I program is especially interested in the development of informatics tools and resources that have the potential to advance all fields of biology under the purview of BIO at NSF.

Brief description of integrative efforts:
Standard ontologies/terminologies: The BD&I program supports projects to create new data structures and new data-management systems for biological databases so they can manage new types of biological information; "Metadatabase" architectures for biology, for example, single query interfaces that present data from transparent queries across multiple databases; algorithms and software related to the retrieval and use of heterogeneous biological information, for example, web services that integrate diverse information sources; and standardized nomenclature, conceptual information models, ontologies to describe biological concepts, and semantic content efforts.

Interactions with other initiatives: The Biological Databases and Informatics program seeks to support research that enables investigators to manage and make use of biological data and information for the discovery of new knowledge and the advancement of the field of biology. The Program supports a range of activities along a continuum, from the formative, theoretical development of new algorithms, data structures and tools specific to the management of biological information, through the development of new information resources to the enhancement of established resources needed by whole communities of biological researchers. However, the highest priority of the BD&I program as reflected in this solicitation is on supporting proposals that address the formative stages of this continuum. Examples include theoretical research on data structures; new database architectures more tuned to the complexity of biology; planning and prototype development of new types of biological data- or knowledge-bases; and design of easy-to-use interfaces and tools for data input, manipulation, analysis and extraction.

Opportunities for collaboration or synergy with the NCBCs: Interactions on development and adoption of terminologies and ontologies; sharing of approaches for developing catalogs and inventories; shared interest in approaches for resource identification.